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☐ 1. Document ID: US 20020013257 A1

L1: Entry 1 of 2

File: PGPB

Jan 31, 2002

PGPUB-DOCUMENT-NUMBER: 20020013257

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020013257 A1

TITLE: Use of ligands to GABAB receptors

PUBLICATION-DATE: January 31, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Bernasconi, Raymond	Oberwil		CH	
Otten, Uwe	Basel		CH	

US-CL-CURRENT: 514/1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RMIC	Draw Desc	Image
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☐ 2. Document ID: US 20010023289 A1

L1: Entry 2 of 2

File: PGPB

Sep 20, 2001

PGPUB-DOCUMENT-NUMBER: 20010023289

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20010023289 A1

TITLE: DNA encoding a GABABR2 polypeptide and uses thereof

PUBLICATION-DATE: September 20, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Jones, Kenneth A.	Bergenfield	NJ	US	
Laz, Thomas M.	Parlin	NJ	US	
Borowsky, Beth	Montclair	NJ	US	

US-CL-CURRENT: 536/23.5

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RMIC	Draw Desc	Image
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Term	Documents
GABAB\$3	0
GABAB.USPT,PGPB.	16
GABABA.USPT,PGPB.	1
GABABLA.USPT,PGPB.	1
GABABRL.USPT,PGPB.	1
GABABRLA.USPT,PGPB.	1
GABABRLB.USPT,PGPB.	1
GABABR2.USPT,PGPB.	1
GABABR2:.USPT,PGPB.	1
GABAB1A.USPT,PGPB.	1
GABAB1AA.USPT,PGPB.	1
(GABAB\$3.AB. OR GABAB\$.TI.).USPT,PGPB.	2

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**Display Format:**

REV

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GBR2\_RAT  
ID GBR2\_RAT STANDARD; PRT; 940 AA.  
AC O88871; Q9QWU2; Q9JK36;  
DT 20-AUG-2001 (Rel. 40, Created)  
5 DT 20-AUG-2001 (Rel. 40, Last sequence update)  
DT 20-AUG-2001 (Rel. 40, Last annotation update)  
DE GAMMA-AMINOBUTYRIC ACID TYPE B RECEPTOR, SUBUNIT 2 PRECURSOR (GABA-B  
DE RECEPTOR 2) (GABA-B-R2) (GB2) (GABABR2).  
GN GABBR2.  
10 OS Rattus norvegicus (Rat).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.  
OX NCBI\_TaxID=10116;  
RN [1]  
15 RP SEQUENCE FROM N.A.  
RC TISSUE=Hypothalamus;  
RX MEDLINE=99087320; PubMed=9872315;  
RA Jones K.A., Borowsky B., Tamm J.A., Craig D.A., Durkin M.M., Dai M.,  
RA Yao W.-J., Johnson M., Gunwaldsen C.A., Huang L.-Y., Tang C., Shen Q.,  
20 RA Salon J.A., Morse K., Laz T., Smith K.E., Nagarathnam D., Noble S.A.,  
RA Branchek T.A., Gerald C.;  
RT "GABA(B) receptors function as a heteromeric assembly of the subunits  
RT GABA(B)R1 and GABA(B)R2.";  
RL Nature 396:674-679(1998).  
25 RN [2]  
RP SEQUENCE FROM N.A.  
RC TISSUE=Brain cortex, and Cerebellum;  
RX MEDLINE=99087322; PubMed=9872317;  
RA Kaupmann K., Malitschek B., Schuler V., Heid J., Froestl W., Beck P.,  
30 RA Mosbacher J., Bischoff S., Kulik A., Shigemoto R., Karschin A.,  
RA Bettler B.;  
RT "GABA-B receptor subtypes assemble into functional heteromeric  
RT complexes.";  
RL Nature 396:683-687(1998).  
35 RN [3]  
RP SEQUENCE FROM N.A.  
RC TISSUE=Brain cortex;  
RX MEDLINE=20193514; PubMed=10727622;  
RA Clark J.A., Mezey E., Lam A.S., Bonner T.I.;  
40 RT "Distribution of the GABA(B) receptor subunit gb2 in rat CNS.";  
RL Brain Res. 860:41-52(2000).  
RN [4]  
RP SEQUENCE FROM N.A.  
RC TISSUE=Hypothalamus;  
45 RA Borowsky B., Laz T., Gerald C.;  
RL Submitted (JAN-1999) to the EMBL/GenBank/DDBJ databases.  
RN [5]  
RP R1A-R2 INTERACTION, AND VARIANTS TYR-337 AND PRO-19 INS.  
RC TISSUE=Hippocampus;  
50 RX MEDLINE=99102694; PubMed=9872744;  
RA Kuner R., Koehr G., Gruenewald S., Eisenhardt G., Bach A.,  
RA Kornau H.-C.;  
RT "Role of Heteromer Formation in GABA-B Receptor Function.";  
RL Science 283:74-77(1999).  
55 CC -!- FUNCTION: RECEPTOR FOR GABA. THE ACTIVITY OF THIS RECEPTOR IS  
CC MEDIATED BY G-PROTEINS THAT INHIBITS ADENYLYL CYCLASE ACTIVITY,  
CC STIMULATES PHOSPHOLIPASE A2, ACTIVATES POTASSIUM CHANNELS,

CC INACTIVATES VOLTAGE-DEPENDENT CALCIUM-CHANNELS AND MODULATES  
 CC INOSITOL PHOSPHOLIPIDS HYDROLYSIS. PLAYS A CRITICAL ROLE IN THE  
 CC FINE-TUNING OF INHIBITORY SYNAPTIC TRANSMISSION. PRE-SYNAPTIC  
 CC GABA-B-R INHIBIT NEUROTRANSMITTER RELEASE BY DOWN-REGULATING  
 5 CC HIGH-VOLTAGE ACTIVATED CALCIUM CHANNELS, WHEREAS POSTSYNAPTIC  
 CC GABA-B-R DECREASE NEURONAL EXCITABILITY BY ACTIVATING A PROMINENT  
 CC INWARDLY RECTIFYING POTASSIUM (KIR) CONDUCTANCE THAT UNDERLIES THE  
 CC LATE INHIBITORY POSTSYNAPTIC POTENTIALS. NOT ONLY IMPLICATED IN  
 CC SYNAPTIC INHIBITION BUT ALSO IN HIPPOCAMPAL LONG-TERM  
 10 CC POTENTIATION, SLOW WAVE SLEEP, MUSCLE RELAXATION AND  
 CC ANTINOCICEPTION.  
 CC -!- SUBUNIT: HETERODIMER OF GABA-B-R1 AND GABA-B-R2. NEITHER OF WHICH  
 CC IS EFFECTIVE ON ITS OWN AND HOMODIMERIC ASSEMBLY DOES NOT SEEM TO  
 CC HAPPEN.  
 15 CC -!- SUBCELLULAR LOCATION: INTEGRAL MEMBRANE PROTEIN. MOREOVER  
 CC COEXPRESSION OF GABA-B-R1 AND GABA-B-R2 APPEARS TO BE A  
 CC PREREQUISITE FOR MATURATION AND TRANSPORT OF GABA-B-R1 TO THE  
 CC PLASMA MEMBRANE.  
 CC -!- TISSUE SPECIFICITY: EXPRESSED IN BRAIN CORTEX, HIPPOCAMPUS, MEDIAL  
 20 CC HABENULA, THALAMUS AND CEREBELLUM. COEXPRESSION IS SEEN IN  
 CC CEREBELLUM.  
 CC -!- DEVELOPMENTAL STAGE: ABUNDANT IN BRAIN CORTEX AND CEREBELLUM  
 CC THROUGHOUT POSTNATAL DEVELOPMENT WHEREAS ITS EXPRESSION IN SPINAL  
 CC CORD GRADUALLY DECREASES.  
 25 CC -!- DOMAIN: ALPHA-HELICAL PARTS OF THE C-TERMINAL INTRACELLULAR REGION  
 CC MEDIATE HETERODIMERIC INTERACTION WITH GABA-B RECEPTOR 1.  
 CC -!- SIMILARITY: BELONGS TO FAMILY 3 OF G-PROTEIN COUPLED RECEPTORS.  
 CC GABA-B RECEPTOR SUBFAMILY.  
 CC -----  
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 CC -----  
 45 -  
 DR EMBL; AF074482; AAD03335.1; -.  
 DR EMBL; AJ011318; CAA09592.1; -.  
 DR EMBL; AF058795; AAC63994.1; -.  
 DR EMBL; AF109405; AAD03338.1; -.  
 50 DR InterPro; IPR001828; ANF\_receptor.  
 DR InterPro; IPR000337; GPCR\_Mgr.  
 DR Pfam; PF00003; 7tm\_3; 1.  
 DR Pfam; PF01094; ANF\_receptor; 1.  
 DR PRINTS; PR00248; GPCR\_MGR.  
 55 DR PRINTS; PR01176; GABABRECEPTR.  
 DR PRINTS; PR01177; GABAB1RECPTR.  
 DR PRINTS; PR01178; GABAB2RECPTR.



	Db	180	AVNPAILKLLKHFRWRRVGTLTQDVQRFSEVRNDLTGVLYGEDIEISDTEFSNDPCTSV	239
	Qy	241	KKLKGNDVRIILGQFDQNMAAKVFCCAYEENMYGSKYQWIIPGWYEPSWWEQVHTEANSS	300
5	Db	240	KKLKGNDVRIILGQFDQNMAAKVFCCAFEESMFGSKYQWIIPGWYEPAWWEQVHVEANSS	299
	Qy	301	RCLRKNLLAAMEGYIGVDFEPLSSQIKTISGKTPQQYEREYNNKRSVGSPSKFHGYAYD	360
	Db	300	RCLRRSLAAMEGYIGVDFEPLSSQIKTISGKTPQQFEREYNSKRSVGSPSKFHGYAYD	359
10	Qy	361	GIWVIAKTLQRAMETLHASSRHQRIQDFNYTDHTLGRIILNAMNETNFFGVTGQVVFRNG	420
	Db	360	GIWVIAKTLQRAMETLHASSRHQRIQDFNYTDHTLGKIIILNAMNETNFFGVTGQVVFRNG	419
15	Qy	421	ERMGTIKFTQFQDSREVKVGEYNAVADTLEIINDTIRFQGSEPPKDKTIILEQLRKISLP	480
	Db	420	ERMGTIKFTQFQDSREVKVGEYNAVADTLEIINDTIRFQGSEPPKDKTIILEQLRKISLP	479
20	Qy	481	LYSILSALTILGMIMASAFLEFFNIKNRNQKLIKMSSPYMNLIILGGMLSYSIFLFLGLD	540
	Db	480	LYSILSALTILGMIMASAFLEFFNIKNRNQKLIKMSSPYMNLIILGGMLSYSIFLFLGLD	539
	Qy	541	GSFVSEKTFETLCTVRTWILTGVYTTAFGAMFAKTWRVHAI FKNVKMKKKKIIKDQKLLVI	600
25	Db	540	GSFVSEKTFETLCTVRTWILTGVYTTAFGAMFAKTWRVHAI FKNVKMKKKKIIKDQKLLVI	599
	Qy	601	VGGMLLIDLICILICWQAVDPLRRTVEKYSMEPDPAGRDISIRPLEHCENTHMTIWLIV	660
	Db	600	VGGMLLIDLICILICWQAVDPLRRTVERYSMEDPAGRDISIRPLEHCENTHMTIWLIV	659
30	Qy	661	YAYKGLMLFGCFLAWETRNVSIPALNDSKYIGMSVYNGIMCIIGAASFLTRDQPNVQ	720
	Db	660	YAYKGLMLFGCFLAWETRNVSIPALNDSKYIGMSVYNGIMCIIGAASFLTRDQPNVQ	719
35	Qy	721	FCIVALVIIFCSTITLCLVFVPKLITLRNPDAAATQNRRFQFTQNQKKEDSKTSTSVTSV	780
	Db	720	FCIVALVIIFCSTITLCLVFVPKLITLRNPDAAATQNRRFQFTQNQKKEDSKTSTSVTSV	779
40	Qy	781	NQASTSRLEGLQSENHRLRMKITELDKDLEEVMTQLQDTPEKTTYIKQNHQELNDILNL	840
	Db	780	NQASTSRLEGLQSENHRLRMKITELDKDLEEVMTQLQDTPEKTTYIKQNHQELNDILSL	839
	Qy	841	GNFTESTDGGKAILKNHLDQNPQLQWNTTEPSRTCKDPIEDINSPEHIQRRSLQLPILH	900
45	Db	840	GNFTESTDGGKAILKNHLDQNPQLQWNTTEPSRTCKDPIEDINSPEHIQRRSLQLPILH	899
	Qy	901	HAYLPSIGGVDASCVSPCVSPTASPRHRHVPPSFRVMVSGL	941
50	Db	900	HAYLPSIGGVDASCVSPCVSPTASPRHRHVPPSFRVMVSGL	940

Art Unit: 1646

## GBR2\_HUMAN

ID GBR2 HUMAN STANDARD; PRT; 941 AA.  
AC O75899; O75974; O75975; Q9UNS9; Q9UNR1; Q9P1R2;  
DT 20-AUG-2001 (Rel. 40, Created)  
5 DT 20-AUG-2001 (Rel. 40, Last sequence update)  
DT 20-AUG-2001 (Rel. 40, Last annotation update)  
DE GAMMA-AMINOBUTYRIC ACID TYPE B RECEPTOR, SUBUNIT 2 PRECURSOR (GABA-B  
DE RECEPTOR 2) (GABA-B-R2) (GB2) (GABABR2) (G PROTEIN-COUPLED RECEPTOR  
DE 51) (GPR 51) (HG20).  
10 GN GABBR2 OR GPR51.  
OS Homo sapiens (Human).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.  
OX NCBI\_TaxID=9606;  
15 RN [1]  
RP SEQUENCE FROM N.A. (ISOFORM 2A).  
RC TISSUE=Cerebellum;  
RX MEDLINE=99087321; PubMed=9872316;  
RA White J.H., Wise A., Main M.J., Green A., Fraser N.J., Disney G.H.,  
20 RA Barnes A.A., Emson P., Foord S.M., Marshall F.H.;  
RT "Heterodimerization is required for the formation of a functional  
RT GABA(B) receptor."  
RL Nature 396:679-682(1998).  
RN [2]  
25 RP PARTIAL SEQUENCE FROM N.A. (ISOFORMS 2A; 2B AND 2C).  
RC TISSUE=Brain;  
RX MEDLINE=20193514; PubMed=10727622;  
RA Clark J.A., Mezey E., Lam A.S., Bonner T.I.;  
RT "Distribution of the GABA(B) receptor subunit gb2 in rat CNS."  
30 RL Brain Res. 860:41-52(2000).  
RN [3]  
RP SEQUENCE FROM N.A. (ISOFORM 2A).  
RA Liu M., Parker R., McCrea K., Watson J., Baker E., Sutherland G.,  
RA Herzog H.;  
35 RT "Cloning and characterization of a novel human GABA-B receptor subtype  
RT with high affinity for GABA and low affinity for baclofen."  
RL Submitted (NOV-1998) to the EMBL/GenBank/DDBJ databases.  
RN [4]  
RP SEQUENCE FROM N.A. (ISOFORM 2A).  
40 RC TISSUE=Hippocampus;  
RA Borowsky B., Laz T., Gerald C.;  
RL Submitted (JAN-1999) to the EMBL/GenBank/DDBJ databases.  
RN [5]  
RP SEQUENCE FROM N.A. (ISOFORM 2A).  
45 RC TISSUE=Fetal brain;  
RX MEDLINE=99189236; PubMed=10087195;  
RA Ng G.Y.K., McDonald T., Bonnert T., Rigby M., Heavens R., Whiting P.,  
RA Chateauneuf A., Coulombe N., Kargman S., Caskey T., Evans J.F.,  
RA O'Neill G.P., Liu Q.;  
50 RT "Cloning of a novel G-protein-coupled receptor GPR 51 resembling GABAB  
RT receptors expressed predominantly in nervous tissues and mapped  
RT proximal to the hereditary sensory neuropathy type 1 locus on  
RT chromosome 9."  
RL Genomics 56:288-295(1999).

Art Unit: 1646

RN [6]  
RP SEQUENCE FROM N.A. (ISOFORM 2A), AND VARIANTS PHE-628 AND ALA-869.  
RC TISSUE=Brain;  
RX MEDLINE=99263199; PubMed=10328880;  
5 RA Martin S.C., Russek S.J., Farb D.H.;  
RT "Molecular identification of the human GABABR2: cell surface  
RT expression and coupling to adenylyl cyclase in the absence of  
RT GABABR1.";  
RL Mol. Cell. Neurosci. 13:180-191(1999).  
10 RN [7]  
RP R1A-R2 INTERACTION.  
RX MEDLINE=99175124; PubMed=10075644;  
RA Ng G.Y.K., Clark J., Coulombe N., Ethier N., Hebert T.E., Sullivan R.,  
RA Kargman S., Chateauneuf A., Tsukamoto N., McDonald T., Whiting P.,  
15 RA Mezey E., Johnson M.P., Liu Q., Kolakowski L.F. Jr., Evans J.F.,  
RA Bonner T.I., O'Neill G.P.;  
RT "Identification of a GABAB receptor subunit, gb2, required for  
RT functional GABAB receptor activity.";  
RL J. Biol. Chem. 274:7607-7610(1999).  
20 RN [8]  
RP R1A-R2 INTERACTION.  
RX MEDLINE=20237752; PubMed=10773016;  
RA Sullivan R., Chateauneuf A., Coulombe N., Kolakowski L.F. Jr.,  
RA Johnson M.P., Hebert T.E., Ethier N., Belley M., Metters K.,  
25 RA Abramovitz M., O'Neill G.P., Ng G.Y.K.;  
RT "Coexpression of full-length gamma-aminobutyric Acid(B) (GABA(B))  
RT receptors with truncated receptors and metabotropic glutamate  
RT receptor 4 supports the GABA(B) heterodimer as the functional  
RT receptor.";  
30 RL J. Pharmacol. Exp. Ther. 293:460-467(2000).  
CC -!- FUNCTION: RECEPTOR FOR GABA. THE ACTIVITY OF THIS RECEPTOR IS  
CC MEDIATED BY G-PROTEINS THAT INHIBITS ADENYLYL CYCLASE ACTIVITY,  
CC STIMULATES PHOSPHOLIPASE A2, ACTIVATES POTASSIUM CHANNELS,  
CC INACTIVATES VOLTAGE-DEPENDENT CALCIUM-CHANNELS AND MODULATES  
35 CC INOSITOL PHOSPHOLIPIDS HYDROLYSIS. PLAYS A CRITICAL ROLE IN THE  
CC FINE-TUNING OF INHIBITORY SYNAPTIC TRANSMISSION. PRE-SYNAPTIC  
CC GABA-B-R INHIBIT NEUROTRANSMITTER RELEASE BY DOWN-REGULATING  
CC HIGH-VOLTAGE ACTIVATED CALCIUM CHANNELS, WHEREAS POSTSYNAPTIC  
CC GABA-B-R DECREASE NEURONAL EXCITABILITY BY ACTIVATING A PROMINENT  
40 CC INWARDLY RECTIFYING POTASSIUM (KIR) CONDUCTANCE THAT UNDERLIES THE  
CC LATE INHIBITORY POSTSYNAPTIC POTENTIALS. NOT ONLY IMPLICATED IN  
CC SYNAPTIC INHIBITION BUT ALSO IN HIPPOCAMPAL LONG-TERM  
CC POTENTIATION, SLOW WAVE SLEEP, MUSCLE RELAXATION AND  
CC ANTINOCICEPTION.  
45 CC -!- SUBUNIT: HETERODIMER OF GABA-B-R1 AND GABA-B-R2. NEITHER OF WHICH  
CC IS EFFECTIVE ON ITS OWN AND HOMODIMERIC ASSEMBLY DOES NOT SEEM TO  
CC HAPPEN.  
CC -!- SUBCELLULAR LOCATION: INTEGRAL MEMBRANE PROTEIN. MOREOVER  
CC COEXPRESSION OF GABA-B-R1 AND GABA-B-R2 APPEARS TO BE A  
50 CC PREREQUISITE FOR MATURATION AND TRANSPORT OF GABA-B-R1 TO THE  
CC PLASMA MEMBRANE.  
CC -!- ALTERNATIVE PRODUCTS: 3 ISOFORMS; 2A (SHOWN HERE), 2B AND 2C; ARE  
CC PRODUCED BY ALTERNATIVE SPLICING.  
CC -!- TISSUE SPECIFICITY: HIGHLY EXPRESSED IN BRAIN, ESPECIALLY IN



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CC CEREBRAL CORTEX, THALAMUS, HIPPOCAMPUS, FRONTAL, OCCIPITAL AND  
 CC TEMPORAL LOBE, OCCIPITAL POLE AND CEREBELLUM, FOLLOWED BY CORPUS  
 CC CALLOSUM, CAUDATE NUCLEUS, SPINAL CORD, AMYGDALA AND MEDULLA.  
 CC WEAKLY EXPRESSED IN HEART, TESTIS AND SKELETAL MUSCLE.  
 5 CC -!- DOMAIN: ALPHA-HELICAL PARTS OF THE C-TERMINAL INTRACELLULAR REGION  
 CC MEDIATE HETERODIMERIC INTERACTION WITH GABA-B RECEPTOR 1.  
 CC -!- SIMILARITY: BELONGS TO FAMILY 3 OF G-PROTEIN COUPLED RECEPTORS.  
 CC GABA-B RECEPTOR SUBFAMILY.  
 CC -----

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25 -  
 DR EMBL; AJ012188; CAA09942.1; -.  
 DR EMBL; AF056085; AAC63228.1; -.  
 DR EMBL; AF095723; AAC63383.1; -.  
 DR EMBL; AF095724; AAC63384.1; -.  
 30 DR EMBL; AF095784; AAD30389.1; -.  
 DR EMBL; AF074483; AAD03336.1; -.  
 DR EMBL; AF069755; AAC99345.1; -.  
 DR EMBL; AF099033; AAD45867.1; -.  
 DR InterPro; IPR001828; ANF\_receptor.  
 35 DR InterPro; IPR000337; GPCR\_Mgr.  
 DR Pfam; PF00003; 7tm\_3; 1.  
 DR Pfam; PF01094; ANF\_receptor; 1.  
 DR PRINTS; PR00248; GPCRMGR.  
 DR PRINTS; PR01176; GABABRECEPTR.  
 40 DR PRINTS; PR01177; GABAB1RECPTR.  
 DR PRINTS; PR01178; GABAB2RECPTR.  
 DR PROSITE; PS50099; PRO\_RICH; 1.  
 DR PROSITE; PS00979; G\_PROTEIN\_RECEP\_F3\_1; FALSE\_NEG.  
 DR PROSITE; PS00980; G\_PROTEIN\_RECEP\_F3\_2; FALSE\_NEG.  
 45 DR PROSITE; PS00981; G\_PROTEIN\_RECEP\_F3\_3; FALSE\_NEG.  
 DR PROSITE; PS50259; G\_PROTEIN\_RECEP\_F3\_4; 1.  
 KW G-protein coupled receptor; Transmembrane; Glycoprotein; Signal;  
 KW Postsynaptic membrane; Coiled coil; Alternative splicing;  
 KW Polymorphism.

50 FT SIGNAL 1 41 POTENTIAL.  
 FT CHAIN 42 941 GAMMA-AMINOBUTYRIC ACID TYPE B RECEPTOR,  
 FT SUBUNIT 2.  
 FT DOMAIN 42 483 EXTRACELLULAR (POTENTIAL).  
 FT TRANSMEM 484 504 I (POTENTIAL).

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	FT	DOMAIN	505	522	CYTOPLASMIC (POTENTIAL).
	FT	TRANSMEM	523	543	II (POTENTIAL).
	FT	DOMAIN	544	551	EXTRACELLULAR (POTENTIAL).
	FT	TRANSMEM	552	572	III POTENTIAL.
5	FT	DOMAIN	573	597	CYTOPLASMIC (POTENTIAL).
	FT	TRANSMEM	598	618	IV (POTENTIAL).
	FT	DOMAIN	619	654	EXTRACELLULAR (POTENTIAL).
	FT	TRANSMEM	655	675	V (POTENTIAL).
	FT	DOMAIN	676	691	CYTOPLASMIC (POTENTIAL).
10	FT	TRANSMEM	692	712	VI (POTENTIAL).
	FT	DOMAIN	713	720	EXTRACELLULAR (POTENTIAL).
	FT	TRANSMEM	721	741	VII (POTENTIAL).
	FT	DOMAIN	742	941	CYTOPLASMIC (POTENTIAL).
	FT	DOMAIN	781	819	COILED COIL (POTENTIAL).
15	FT	CARBOHYD	90	90	N-LINKED (GLCNAC. . .) (POTENTIAL).
	FT	CARBOHYD	298	298	N-LINKED (GLCNAC. . .) (POTENTIAL).
	FT	CARBOHYD	389	389	N-LINKED (GLCNAC. . .) (POTENTIAL).
	FT	CARBOHYD	404	404	N-LINKED (GLCNAC. . .) (POTENTIAL).
	FT	CARBOHYD	453	453	N-LINKED (GLCNAC. . .) (POTENTIAL).
20	FT	VARSP LIC	902	927	MISSING (IN ISOFORM 2B).
	FT	VARSP LIC	929	941	HVPPSFRVMVSGL -> TTLGRGVCCRNTVGSGCGEAGHHG
	FT				WPLRTTRMALRWTGRGRRLGT (IN ISOFORM 2C).
	FT	VARIANT	628	628	Y -> F.
	FT				/FTid=VAR_010148.
25	FT	VARIANT	869	869	T -> A.
	FT				/FTid=VAR_010149.
	FT	CONFLICT	6	6	S -> R (IN REF. 5).
	FT	CONFLICT	12	12	P -> R (IN REF. 5).
	FT	CONFLICT	424	424	G -> E (IN REF. 3).
30	SQ	SEQUENCE	941 AA;	105821 MW;	09F1773DB0673C5D CRC64;

LOCUS AF056085 5786 bp mRNA PRI 08-OCT-1998  
DEFINITION Homo sapiens GABA-B receptor mRNA, complete cds.  
ACCESSION AF056085  
NID g3719225  
KEYWORDS .  
SOURCE human.

ORGANISM Homo sapiens  
Eukaryota; Metazoa; Chordata; Vertebrata; Mammalia; Eutheria;  
Primates; Catarrhini; Hominidae; Homo.  
REFERENCE 1 (bases 1 to 5786)  
AUTHORS Clark, J.C., Lam, A. and Bonner, T.I.  
TITLE gb2, a second GABA-B receptor  
JOURNAL Unpublished  
REFERENCE 2 (bases 1 to 5786)  
AUTHORS Clark, J.C., Lam, A. and Bonner, T.I.  
TITLE Direct Submission  
JOURNAL Submitted (27-MAR-1998) Section on Genetics, NIMH, Bldg 36, Rm  
3D06, MSC 4094, Bethesda, MD 20892-4094, USA

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 ACCESSION AJ012188  
 NID g3776097  
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 Primates; Catarrhini; Hominidae; Homo.  
 REFERENCE 1 (bases 1 to 2826)  
 AUTHORS White, J.H., Wise, A., Main, M.J., Green, A., Fraser, N.J., Disney, G.H.,  
 Barnes, A.A., Emson, P., Foord, S.M. and Marshall, F.H.  
 TITLE Heterodimerisation is required to form a functional GABAB receptor  
 JOURNAL Unpublished  
 REFERENCE 2 (bases 1 to 2826)  
 AUTHORS Fraser, N.J.  
 TITLE Direct Submission  
 JOURNAL Submitted (16-OCT-1998) Fraser N.J., Receptor Systems, Cellular  
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Db 2821 CTGTAA 2826
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 Eukaryota; Metazoa; Chordata; Vertebrata; Mammalia; Eutheria;  
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 REFERENCE 1 (bases 1 to 743)  
 AUTHORS Clark, J.C., Lam, A. and Bonner, T.I.  
 TITLE gb2, a second GABA-B receptor  
 JOURNAL Unpublished  
 REFERENCE 2 (bases 1 to 743)  
 AUTHORS Clark, J.C., Lam, A. and Bonner, T.I.  
 TITLE Direct Submission  
 JOURNAL Submitted (27-MAR-1998) Section on Genetics, National Institute of  
 Mental Health, Bldg 36, Rm 3D06, MSC 4094, Bethesda, MD 20892-4090,  
 USA  
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 DATE (DATE): 7 Apr 1999  
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 Homo  
 NUCLEIC ACID COUNT (NA): 729 a 925 c 830 g 591 t  
 REFERENCE: 1 (bases 1 to 3075)  
 AUTHOR (AU): Ng, G.Y.K.; McDonald, T.; Bonnert, T.; Rigby, M.;  
 Heavens, R.; Whiting, P.; Chateaufneuf, A.; Coulombe, N.;  
 Kargmen, S.; Caskey, T.; Evans, J.; O'Neill, G.P.; Liu, Q.  
 TITLE (TI): Cloning of a novel G-protein-coupled receptor GPR 51  
 resembling GABAB receptors expressed predominantly in  
 nervous tissues and mapped proximal to the hereditary  
 sensory neuropathy type 1 locus on chromosome 9  
 JOURNAL (SO): Genomics, 56 (3), 288-295 (1999)  
 REFERENCE: 2 (bases 1 to 3075)  
 AUTHOR (AU): McDonald, T.; Liu, Q.  
 TITLE (TI): Direct Submission  
 JOURNAL (SO): Submitted (03-JUN-1998) Human Genetics, Merck Research  
 Labs, West Point, PA 19486, USA

FEATURES (FEAT):

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 ACCESSION Z39716  
 NID g565511  
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 Eukaryotae; mitochondrial eukaryotes; Metazoa; Chordata;  
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 REFERENCE 1 (bases 1 to 326)  
 AUTHORS Genexpress.  
 TITLE Direct Submission  
 JOURNAL Submitted (24-OCT-1994) Genethon, B.P. 60, 91002 Evry Cedex France  
 and Genetique Moleculaire et Biologie du developpement, CNRS UPR420  
 B.P. 8, 94801 Villejuif Cedex France.E-mail: genexpress@genethon.fr  
 REFERENCE 2 (bases 1 to 326)  
 AUTHORS Genexpress.  
 TITLE The Genexpress cDNA program  
 JOURNAL Unpublished  
 REFERENCE 3 (bases 1 to 326)  
 AUTHORS Auffray,C., Behar,G., Bois,F., Bouchier,C., da Silva,C.,  
 Devignes,M.D., Duprat,S., Houlgatte,R., Jumeau,M.N., Lamy,B.,  
 Lorenzo,F., Mitchell,H., Mariage-Samson,R., Pietu,G., Pouliot,Y.,  
 Sebastiani-Kabaktchis,C. and Tessier,A.  
 TITLE IMAGE: molecular integration of the analysis of the human genome  
 and its expression  
 JOURNAL C. R. Acad. Sci. III, Sci. Vie 318 (2), 263-272 (1995)  
 MEDLINE 95277534  
 COMMENT Clone library from B.Souares, Psychiatry Dept. Columbia University  
 USA;

Cloning\_method: total mRNA was oligo-(dT) primed and directionally  
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Sequencing\_method: single read, full automatic;  
 Primer: (-21)M13\_universal;  
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 genbank release 81 swissprot release 28.

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 Matches 317; Conservative 1; Mismatches 5; Indels 0; Gaps 0;

LOCUS HSA012188 2826 bp mRNA PRI 19-OCT-1998  
 DEFINITION Homo sapiens mRNA for GABAB receptor, subunit 2.  
 ACCESSION AJ012188  
 NID g3776097  
 KEYWORDS GABAB receptor; gabab-R2 gene; subunit 2.  
 SOURCE human.  
 ORGANISM Homo sapiens  
 Eukaryota; Metazoa; Chordata; Vertebrata; Mammalia; Eutheria;  
 Primates; Catarrhini; Hominidae; Homo.  
 REFERENCE 1 (bases 1 to 2826)  
 AUTHORS White, J.H., Wise, A., Main, M.J., Green, A., Fraser, N.J., Disney, G.H.,  
 Barnes, A.A., Emson, P., Foord, S.M. and Marshall, F.H.  
 TITLE Heterodimerisation is required to form a functional GABAB receptor  
 JOURNAL Unpublished  
 REFERENCE 2 (bases 1 to 2826)  
 AUTHORS Fraser, N.J.  
 TITLE Direct Submission  
 JOURNAL Submitted (16-OCT-1998) Fraser N.J., Receptor Systems, Cellular  
 Sciences, GlaxoWellcome, Medicines Research Centre, Gunnels Wood  
 Road, Stevenage, Herts. SG1 2NY, U.K  
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 ACCESSION AB016161  
 NID g3929914  
 KEYWORDS rat GABAB receptor 1d.  
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 cerebellum cDNA library clone:rat GABABR1d.  
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 Rodentia; Sciurognathi; Muridae; Murinae; Rattus.  
 REFERENCE 1 (sites)  
 AUTHORS Isomoto, S., Kaibara, M., Yano, K. and Taniyama, K.  
 TITLE Cloning and tissue distribution of novel isoform of rat GABAB  
 receptors  
 JOURNAL Biochem. Biophys. Res. Commun. (1998) In press  
 REFERENCE 2 (bases 1 to 3202)  
 AUTHORS Isomoto, S.  
 TITLE Direct Submission  
 JOURNAL Submitted (10-JUL-1998) to the DDBJ/EMBL/GenBank databases. Shojiro  
 Isomoto, Nagasaki University School of Medicine, Third Department  
 of Internal Medicine; Sakamoto 1-7-1, Nagasaki, Nagasaki 852-8102,  
 Japan (Tel:+81-95-849-7047, Fax:+81-95-849-7048)  
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 /tissue\_type="Cerebellum"  
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 CDS 101. .2539  
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Db 540 GSFVSEKTFETLCTVRTWILTVGYTTAFGAMFAKTWRVHAIFKNVKMKKKI IKDQKLLVI 599  
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Qy	355	H--GYAYDGIWVI AKTLQRAMETLHASSRH-QRIQDFNYTDH TLGRILNAMNETNFFGV	411
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Qy	708	AVSFLTRDQPNVQFCIVALV IIFCSTITLCLVFPKLITLRTNPDAATQNR RFQFTQNQK	767
Db	704	PVTMILSSQQAFAFASLAIVFSSYITLVVLFV PKMRRLLITRGE-----WQSET	753
Qy	768	KEDSKTSTSVTSVNQASTSRLEGLQSENHRLRMKITELDKDLEEVTMQLO	817
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ID V10267 standard; cDNA to mRNA; 2924 BP.  
AC V10267;  
DT 03-JUN-1998 (first entry)  
DE Human GABA-BR1b receptor cDNA.  
KW Gamma-aminobutyric acid; GABA-BR1a/b receptor; human; brain; agonist;  
KW inhibitory neurotransmitter; peripheral nervous system; antagonist;  
KW treatment; dementia; depression; anxiety; bronchial inflammation; asthma;  
KW epilepsy; cognitive function; ds.  
OS Homo sapiens.  
FH Key Location/Qualifiers  
FT CDS 169..2703  
FT /\*tag= a  
FT /product= GABA-BR1b  
PN WO9746675-A1.  
PD 11-DEC-1997.  
PF 19-MAR-1997; E01370.  
PR 22-NOV-1996; US-756091.  
PR 30-MAY-1996; US-655716.  
PA (NOVS ) NOVARTIS AG.  
PI Bettler B, Bittiger H, Froestl W, Kaupmann K, Mickel SJ;  
DR WPI; 98-042183/04.  
DR P-PSDB; W40119.  
PT Purified GABA-B receptor or receptor protein - and antagonists of  
PT these which may be useful in treating nervous system disorders  
PS Claim 3; Page 79-86; 108pp; English.  
CC This cDNA sequence encodes a novel human GABA-B receptor protein,  
CC GABA-BR1b. GABA (gamma-aminobutyric acid) is the major inhibitory  
CC neurotransmitter found in the brain and peripheral nervous system  
CC and this receptor may be used for the identification of GABA-B  
CC receptor agonists and antagonists. Such proteins may be used in  
CC treatment of dementia, depression, anxiety, epilepsy, spasticity,  
CC bronchial inflammation or asthma or to improve cognitive function.  
CC GABA-B receptor ligands and probes derived from this sequence can be  
CC used to assay for GABA-B receptors or DNA encoding them.  
SQ Sequence 2924 BP; 628 A; 852 C; 793 G; 651 T;

Query Match 9.0%; Score 313.6; DB 1; Length 2924;  
Best Local Similarity 49.1%; Pred. No. 6.9e-48;  
Matches 996; Conservative 0; Mismatches 1004; Indels 30; Gaps 5;

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Qy 527 cccgccgtggaactggccatcgagca--gatccgcaacgagtcactcctgcgcccctac 583
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Db 385 CCCGCGGTGGAGATGGCGCTGGAGGACGTGAATAGCCGCAGGGACATCCTGCCGGACTAT 444

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Db 562 GTCTCCACGCTGGTGGCTGAGGCTGCTAGGATGTGGAACCTCATTGTGCTTTCCTATGGC 621

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Qy 824 tcagacaatgcggtgaatccagccattctgaagttgctcaagcactaccagtgggaagcgc 883  
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 Db 982 GTCTGGTTCCTCATTGGGTGGTATGCTGACAATTGGTTCAAG-----ATCTACGAC 1032  
 Qy 1184 aactcatcccgtgcctccggaagaatctgcttgcctgcatggagggctacattggcgtg 1243  
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 Db 1033 CCTTCTATCAACTGCACAGTGGATGAGATGACTGAGGCGGTGGAGGGCCACATCACAAC 1092  
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Qy	1838	agtccatacatgaacaaccttatcatccttggagggatgctctcctatgcttccatattt	1897
Db	1693	CAGCCCAACCTGAACAACCTGACTGCTGTGGGCTGCTCACTGGCTTTAGCTGCTGTCTTC	1752
Qy	1898	ctctttggccttgatggatcctttgtctctgaaaagacctttgaaacactttgcaccgtc	1957
Db	1753	CCCCTGGGGCTCGATGGTTACCACATTGGGAGGAACCAGTTTCCTTTCGTCTGCCAGGCC	1812
Qy	1958	aggacctggattctcaccgtgggctacacgaccttttggggccatgtttgcaaagacc	2017
Db	1813	CGCCTCTGGCTCCTGGGCTGGGCTTTAGTCTGGGCTACGGTTCATGTTACCAAGATT	1872
Qy	2018	tggagagtccacgccatcttcaaaaatgtgaaaatgaagaagaagatcatcaaggacc--	2076
Db	1873	TGGTGGGTCCACACGGTCTTCACAAAGAAGGAAGAAAAGAAGGAGTGGAGGAAGACTCTG	1932
Qy	2076	-----agaaactgcttgtgatcggtggggggcatgctgctgatcgacctgtgtatcctg	2128
Db	1933	GAACCCTGGAAGCTGTATGCCACAGTGGGCTGCTGGTGGGCATGGATGTCCTCACTCTC	1992
Qy	2129	atctgctggcaggctgtggacccccctgcgaaggacagtggagaagtacagcatggagccg	2188
Db	1993	GCCATCTGGCAGATCGTGGACCTCTGCACCGGACCATTGAGACATTTGCCAAGGAGGAA	2052
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Qy	2249	atgaccatctggcttggcatcgtctatgcctacaagggaacttctcatgttgttcggttgt	2308
Db	2113	ATGAATACATGGCTTGGCATTCTTCTATGGTTACAAGGGGCTGCTGCTGCTGCTGGGAATC	2172
Qy	2309	ttcttagcttgggagacccgcaacgtcagcatccccgcactcaacgacagcaagtacatc	2368
Db	2173	TTCCTTGCTTATGAGACCAAGAGTGTGTCCACTGAGAAGATCAATGATCACCGGGCTGTG	2232
Qy	2369	gggatgagtgtctacaacgtggggatcatgtgcatcatcggggcccgtgtctccttctg	2428
Db	2233	GGCATGGCTATCTACAATGTGGCAGTCCTGTGCCTCATCACTGCTCCTGTACCATGATT	2292
Qy	2429	acccgggaccagcccaatgtgcagttctgcatcgtggctctggatcatcttctgcagc	2488
Db	2293	CTGTCCAGCCAGCAGGATGCAGCCTTTGCCTTTGCCTCTCTTGCCATAGTTTCTCCTCC	2352
Qy	2489	accatcacctctgcctggatttcgtgccgaagctcatcacctgagaac	2538
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ID V10266 standard; cDNA to mRNA; 2837 BP.  
AC V10266;  
DT 03-JUN-1998 (first entry)  
DE Rat GABA-BR1b receptor cDNA.  
KW Gamma-aminobutyric acid; GABA-BR1b receptor; rat; brain; agonist;  
KW inhibitory neurotransmitter; peripheral nervous system; antagonist;  
KW treatment; dementia; depression; anxiety; bronchial inflammation; asthma;  
KW epilepsy; cognitive function; ds.  
OS Rattus norvegicus.  
FH Key Location/Qualifiers  
FT CDS 228..2762  
FT /\*tag= a  
FT /product= GABA-BR1b  
PN WO9746675-A1.  
PD 11-DEC-1997.  
PF 19-MAR-1997; E01370.  
PR 22-NOV-1996; US-756091.  
PR 30-MAY-1996; US-655716.  
PA (NOVS ) NOVARTIS AG.  
PI Bettler B, Bittiger H, Froestl W, Kaupmann K, Mickel SJ;  
DR WPI; 98-042183/04.  
DR P-PSDB; W40118.  
PT Purified GABA-B receptor or receptor protein - and antagonists of  
PT these which may be useful in treating nervous system disorders  
PS Claim 3; Page 67-74; 108pp; English.  
CC This cDNA sequence encodes a novel rat GABA-B receptor protein,  
CC GABA-BR1b. GABA (gamma-aminobutyric acid) is the major inhibitory  
CC neurotransmitter found in the brain and peripheral nervous system  
CC and this receptor may be used for the identification of GABA-B  
CC receptor agonists and antagonists. Such proteins may be used in  
CC treatment of dementia, depression, anxiety, epilepsy, spasticity,  
CC bronchial inflammation or asthma or to improve cognitive function.  
CC GABA-B receptor ligands and probes derived from this sequence can be  
CC used to assay for GABA-B receptors or DNA encoding them.  
SQ Sequence 2837 BP; 621 A; 842 C; 764 G; 610 T;

Query Match 9.0%; Score 312.4; DB 1; Length 2837;  
Best Local Similarity 47.7%; Pred. No. 1.1e-47;  
Matches 1095; Conservative 0; Mismatches 1171; Indels 30; Gaps 5;

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Qy 258 ccgagtgcgcccgcgcccgcagcccgccgcccgcgcatggcttccccgcggagctccggggc 317
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Db 181 CTGAGCTGCCCCCAACCAAGGAGGCCGCCGCCGCCGCCCTCGCCATGGGCCCCGGGGG 240

Qy 318 agccccgggcccgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgc 377
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Qy 378 tgccgctgctgctgcctctggcgccccggggcctggggctggggcgcgggcgccccccggc 437
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Qy 438 cgccgcccagcagccccgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgcgc 497
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Db 361 ACCCTCCTCAGAACGGCGTGAGTATACATCGGGGCGCTGTTTCCCATGAGCGGGGGCT 420

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Qy 558 gcaacgagtcactcctgcgcccctacttctcgacctgcggctctatgacacggagtgcg 617  
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 Db 1786 GCTCACTGGCACTGGCTGCTGTCTTCCCTCTCGGGCTGGATGGTTACCACATAGGGAGAA 1845  
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 Qy 2052 tgaagaa-----gaagatcatcaaggaccagaaactgcttgatcggtgggggggca 2102  
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ID V10264 standard; cDNA to mRNA; 4376 BP.  
AC V10264;  
DT 03-JUN-1998 (first entry)  
DE Rat GABA-BR1a receptor cDNA.  
KW Gamma-aminobutyric acid; GABA-BR1a receptor; rat; brain; agonist;  
KW inhibitory neurotransmitter; peripheral nervous system; antagonist;  
KW treatment; dementia; depression; anxiety; bronchial inflammation; asthma;  
KW epilepsy; cognitive function; ds.  
OS Rattus norvegicus.  
FH Key Location/Qualifiers  
FT CDS 182..3064  
FT /\*tag= a  
FT /product= GABA-BR1a  
PN W09746675-A1.  
PD 11-DEC-1997.  
PF 19-MAR-1997; E01370.  
PR 22-NOV-1996; US-756091.  
PR 30-MAY-1996; US-655716.  
PA (NOVS ) NOVARTIS AG.  
PI Bettler B, Bittiger H, Froestl W, Kaupmann K, Mickel SJ;  
DR WPI; 98-042183/04.  
DR P-PSDB; W40116.  
PT Purified GABA-B receptor or receptor protein - and antagonists of  
PT these which may be useful in treating nervous system disorders  
PS Claim 3; Page 42-50; 108pp; English.  
CC This cDNA sequence encodes a novel rat GABA-B receptor protein,  
CC GABA-BR1a. GABA (gamma-aminobutyric acid) is the major inhibitory  
CC neurotransmitter found in the brain and peripheral nervous system  
CC and this receptor may be used for the identification of GABA-B  
CC receptor agonists and antagonists. Such proteins may be used in  
CC treatment of dementia, depression, anxiety, epilepsy, spasticity,  
CC bronchial inflammation or asthma or to improve cognitive function.  
CC GABA-B receptor ligands and probes derived from this sequence can be  
CC used to assay for GABA-B receptors or DNA encoding them.  
SQ Sequence 4376 BP; 940 A; 1209 C; 1195 G; 1032 T;

Query Match 8.8%; Score 307.6; DB 1; Length 4376;  
Best Local Similarity 48.8%; Pred. No. 8.4e-47;  
Matches 968; Conservative 0; Mismatches 989; Indels 27; Gaps 4;

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Qy 630 ggttgaaagccttctacgatgcaataaaatacgggccgaaccacttgatggtgtttggag 689
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Db 852 CCACCAAGTACTTGTACGAATACTCTACAATGACCCCATCAAGATCATTCTCATGCCTG 911

Qy 690 gcgtctgtccatccgtcacatccatcattgcagagtcctccaaggctggaatctggtgc 749
      || |||| || |||| || || || || || || || || || || || || ||
Db 912 G---CTGTAGTTCTGTCTCCACACTTGTAGCTGAGGCTGCCGGATGTGGAACCTTATTG 968

Qy 750 agctttcttttctgcaaccacgcctgttctagccgataagaaaaataacccttatttct 809
      ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 969 TGCTCTCATATGGCTCCAGTTCACCAGCCTTGTCAAACCGACAGCGTTTCCACGTTCT 1028

Qy 810 ttcggaccgtcccatcagacaatgcggtgaatccagccattctgaagttgctcaagcact 869
      || |||| ||||| ||| |||| || || || || || || || || || ||
Db 1029 TCCGGACGCATCCATCCGCCCACTCCACAATCCACCCGGGTGAAACTCTTCGAAAAGT 1088

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Qy 870 accagtgggaagcgctggtggcagcgtgacgcaagacgttcagaggttctctgaggtgcgga 929  
 Db 1089 GGGGCTGGAAGAAGATCGCTACCATCCAACAGACCACCGAGGTCTTCACCTCAACGCTGG 1148  
 Qy 930 atgacctgactggagttctgtatggcgaggacattgagatttcagacaccgagagcttct 989  
 Db 1149 ATGACCTGGAGGAGCGAGTGAAGAGGCTGGGATCGAGATCACTTTCCGACAGAGTTTCT 1208  
 Qy 990 ccaacgatccctgtaccagtgtcaaaaagctgaaggggaatgatgtgcggatcatccttg 1049  
 Db 1209 TCTCGGATCCAGCTGTGCCTGTTAAAAACCTGAAGCGTCAAGATGCTCGAATCATCGTGG 1268  
 Qy 1050 gccagtttgaccagaatatggcagcaaaagtgttctgttgatgcatacaggagagaacatgt 1109  
 Db 1269 GACTTTTCTATGAGACGGAAGCCCGGAAAGTTTTTTGTGAGGTCTATAAGGAAAGGCTCT 1328  
 Qy 1110 atggtagtaaatatcagtggtatcattccgggctggtacgagccttcttgggtgggagcagg 1169  
 Db 1329 TTGGGAAGAAGTACGTCTGGTTCCTCATCGGGTGGTATGCTGACAACCTGGT----- 1380  
 Qy 1170 tgcacacggaagccaactcatcccgtgcctccggaagaatctgcttgctgccatggagg 1229  
 Db 1380 TCAAGACCTATGACCCGTCAATCAATTGTACAGTGGGAAGAAATGACCGAGGCGGTGGAGG 1439  
 Qy 1230 gctacattggcggtggatttcgagcccctgagctccaagcagatcaagaccatctcaggaa 1289  
 Db 1440 GCCACATCACCACGGAGATTGTCTATGCTGAACCTGCCAACACCCGAAGCATTTCACAACA 1499  
 Qy 1290 agactccacagcagtatgagagagagtacaacaacaagcggtcagg-----cgtggggc 1343  
 Db 1500 TGACGTCACAGGAATTTGTGGAGAACTAACCAAGCGGCTGAAAAGACACCCCGAGGAGA 1559  
 Qy 1344 ccagcaagttccacgggtacgcctacgatggcatctgggtcatcgccaagacactgcaga 1403  
 Db 1560 CTGGAGGCTTCCAGGAGGCACCACTGGCCTATGATGCTATCTGGGCCTTGGCTTTGGCCT 1619  
 Qy 1404 gggccatggagacactgcatgccagcagccggcaccagcggatccaggacttcaactaca 1463  
 Db 1620 TGAACAAGACGTCTGGAGGAGGTGGTTCGTTCCGGCGTGCCTGGAGGACTTTAACTACA 1679  
 Qy 1464 cggaccacacgctggggcaggatcatcctcaatgccatgaacgagaccaacttcttcgggg 1523  
 Db 1680 ACAACCAGACCATTACAGACCAGATCTACCGGGCCATGAACTCCTCCTCTTGGAGGGCG 1739  
 Qy 1524 tcacgggtcaagttgtattccggaatggggagagaatggggaccattaaatttactcaat 1583  
 Db 1740 TTTCTGGCCATGTGGTCTTTGATGCCAGCGGCTCCCGGATGGCATGGACACTTATCGAGC 1799  
 Qy 1584 ttcaagacagcagggaggtgaaggtgggagagtacaacgctgtggccgacacactggaga 1643  
 Db 1800 AGCTACAGGGCGGCAGCTACAAGAAGATCGGCTACTACGACAGACCAAGGATGATCTTT 1859  
 Qy 1644 tcatcaatgacaccatcaggttccaaggatccgaaccaccaaagacaagaccatcatcc 1703  
 Db 1860 CCTGGTCCAAAACGGACAAGTGGATTGGAGGGTCTCCCCAGCTGACCAGACCTTGGTCA 1919  
 Qy 1704 tggagcagctgcggaagatctccctacctctctacagcatcctctctgccctcaccatcc 1763  
 Db 1920 TCAAGACATTCCGTTTCTGTCTCAGAACTCTTTATCTCCGTCTCAGTTCTCTCCAGCC 1979  
 Qy 1764 tcgggatgatcatggtccagtgccttttctcttcttcaacatcaagaaccggaatcagaagc 1823

Db	1980	TGGGCATTGTTCTTGCTGTTGTCTGTCTGTCTTAAACATCTACAACCTCCCACGTTTCGTT	2039
Qy	1824	tcataaagatgtcgagtcatacatgaacaaccttatcatccttggagggatgctctcct	1883
Db	2040	ATATCCAGAACTCCCAGCCCAACCTGAACAATCTGACTGCTGTGGGCTGCTCACTGGCAC	2099
Qy	1884	atgcttccatatttctctttggccttgatggatcctttgtctctgaaaagacctttgaaa	1943
Db	2100	TGGCTGCTGTCTTCCCTCTCGGGCTGGATGGTTACCACATAGGGAGAAGCCAGTTCCCGT	2159
Qy	1944	cactttgcaccgtcaggacctggattctcaccgtgggctacacgaccgcttttggggcca	2003
Db	2160	TTGTCTGCCAGGCCCGCCTTTGGCTCTTGGGCTTGGGCTTAGTCTGGGCTATGGCTCTA	2219
Qy	2004	tgtttgcaaagacctggagagtcacgccatcttcaaaaatgtgaaaatgaagaa-----	2059
Db	2220	TGTTCAACCAAGATCTGGTGGGTCCACACAGTCTTCACGAAGAAGGAGGAGAAGAAGGAGT	2279
Qy	2059	----gaagatcatcaaggaccagaaactgcttgtgatcgtggggggcatgctgctgatcg	2114
Db	2280	GGAGGAAGACCCTAGAGCCCTGGAAACTCTATGCCACTGTGGGCCTGCTGGTGGGCATGG	2339
Qy	2115	acctgtgtatcctgatctgctggcaggctgtggacccccctgcgaaggacagtggagaagt	2174
Db	2340	ATGTCCTGACTCTTGCCATCTGGCAGATTGTGGACCCCTGCACCGAACCATTGAGACTT	2399
Qy	2175	acagcatggagccggaccagcaggacgggatctccatccgccctctcctggagcact	2234
Db	2400	TTGCCAAGGAGGAACCAAAGGAAGACATCGATGTCTCCATCTGCCCCAGTTGGAGCACT	2459
Qy	2235	gtgagaacacccatgatgaccatctggccttgcatcgtctatgcctacaagggaacttctca	2294
Db	2460	GCAGCTCCAAGAAGATGAATACGTGGCTTGGCATTCTTCTATGGTTACAAGGGGCTGCTGC	2519
Qy	2295	tgttgttcggttgtttcttagcttgggagacccgcaacgtcagcatccccgcactcaacg	2354
Db	2520	TGCTGCTGGGAATCTTTCTTGCTTACGAAACCAAGAGCGTGCTCACTGAAAAGATCAATG	2579
Qy	2355	acagcaagtacatcgggatgagtgtctacaacgtggggatcatgtgcatcatcggggccg	2414
Db	2580	ACCACAGGGCCGTGGGCATGGCTATCTACAATGTCGCGGTCTGTGTCTCATCACTGCTC	2639
Qy	2415	ctgtctccttcctgacccgggaccagcccaatgtgcagttctgcatcgtggctctggtea	2474
Db	2640	CTGTGACCATGATCCTTTCCAGTCAGCAGGACGCAGCCTTTGCCTTTGCCTCTCTGGCCA	2699
Qy	2475	tcattctctgcagcaccatcaccctctgcctgggtattcgtgccgaagctcatcaccctga	2534
Db	2700	TCGTGTTCTCTTCTACATCACTCTGGTTGTGCTCTTTGTGCCCAAGATGCGCAGGCTGA	2759
Qy	2535	gaac	2538
Db	2760	TCAC	2763

(FILE 'HOME' ENTERED AT 12:22:44 ON 01 JUN 1999)

FILE 'MEDLINE, BIOSIS, CAPLUS' ENTERED AT 12:23:27 ON 01 JUN 1999

L1           6 S HG20  
L2           6 DUP REM L1 (0 DUPLICATES REMOVED)  
              E MCDONALD, T  
              E MCDONALD T/AU  
L3           152 S E3  
              E MCDONALD TERRE/AU  
L4           9 S E4-E6  
              E BONNERT T/AU  
L5           37 S E3-E7  
L6           196 S L3 OR L4 OR L5  
L7           22 S L6 AND (GABA? OR GAMMA?)  
L8           11 DUP REM L7 (11 DUPLICATES REMOVED)

FILE 'GENBANK' ENTERED AT 12:34:38 ON 01 JUN 1999

L9           2 S HG20

(FILE 'USPAT' ENTERED AT 12:13:09 ON 01 JUN 1999)

L1 1 S HG20

L2 72 S (GABA?(5A)RECEPTOR)/TI OR ((GABA?(5A)RECEPTOR?)/AB)



- L8 ANSWER 1 OF 11 MEDLINE  
 TI Stoichiometry of a ligand-gated ion channel determined by fluorescence energy transfer.  
 AU Farrar S J; Whiting P J; **Bonnert T P**; McKernan R M  
 SO JOURNAL OF BIOLOGICAL CHEMISTRY, (1999 Apr 9) 274 (15) 10100-4.  
 Journal code: HIV. ISSN: 0021-9258.
- AB We have developed a method to determine the stoichiometry of subunits within an oligomeric cell surface receptor using fluorescently tagged antibodies to the individual subunits and measuring energy transfer between them. Anti-c-Myc monoclonal antibody (mAb 9-E10) derivatized with a fluorophore (europium cryptate, EuK) was used to individually label c-Myc-tagged alpha-, beta2-, or **gamma2**-subunits of the hetero-oligomeric **gamma**-aminobutyric acid (**GABAA**) receptor in intact cells. The maximal fluorescent signal derived from the alpha(c-Myc)beta2gamma2 and the alpha1beta2(c-Myc)**gamma2** receptors was twice that obtained with alpha1beta2gamma2(c-Myc), suggesting that there are 2x alpha-, 2x beta-, and 1x **gamma**-subunits in a receptor monomer. This observation was extended using fluorescence energy transfer. Receptors were half-maximally saturated with EuK-anti-c-Myc mAb, and the remaining alpha1(c-Myc) subunits were labeled with excess anti-c-Myc mAb derivatized with the fluorescence energy acceptor, XL665. On exposure to laser light, energy transfer from EuK to XL665 occurred with alpha1(c-Myc)beta2gamma2 and alpha1beta2(c-Myc)**gamma2**, but no significant energy transfer was observed with alpha1beta2gamma2(c-Myc) receptors, indicating the absence of a second **gamma**-subunit in a receptor monomer. We confirm that the **GABAA** receptor subtype, alpha1beta2gamma2, is composed of two copies each of the alpha- and beta-subunits and one copy of the **gamma**-subunit (i.e. (alpha)2(beta)2(**gamma**)1) and conclude that this method would have general applicability to other multisubunit cell surface proteins.
- L8 ANSWER 2 OF 11 MEDLINE  
 TI Identification of a **GABAB** receptor subunit, gb2, required for functional **GABAB** receptor activity.  
 AU Ng G Y; Clark J; Coulombe N; Ethier N; Hebert T E; Sullivan R; Kargman S; Chateaufneuf A; Tsukamoto N; **McDonald T**; Whiting P; Mezey E; Johnson M P; Liu Q; Kolakowski L F Jr; Evans J F; Bonner T I; O'Neill G P  
 SO JOURNAL OF BIOLOGICAL CHEMISTRY, (1999 Mar 19) 274 (12) 7607-10.  
 Journal code: HIV. ISSN: 0021-9258.
- AB G protein-coupled receptors are commonly thought to bind their cognate ligands and elicit functional responses primarily as monomeric receptors. In studying the recombinant **gamma**-aminobutyric acid, type B (**GABAB**) receptor (gb1a) and a **GABAB**-like orphan receptor (gb2), we observed that both receptors are functionally inactive when expressed individually in multiple heterologous systems. Characterization of the tissue distribution of each of the receptors by in situ hybridization histochemistry in rat brain revealed co-localization of gb1 and gb2 transcripts in many brain regions, suggesting the hypothesis that gb1 and gb2 may interact in vivo. In three established functional systems (inwardly rectifying K+ channel currents in *Xenopus* oocytes, melanophore pigment aggregation, and direct cAMP measurements in HEK-293 cells), **GABA** mediated a functional response in cells coexpressing gb1a and gb2 but not in cells expressing either receptor individually. This **GABA** activity could be blocked with the **GABAB** receptor antagonist CGP71872. In COS-7 cells coexpressing gb1a and gb2 receptors, co-immunoprecipitation of gb1a and gb2 receptors was demonstrated,

indicating that  $\alpha 1a$  and  $\alpha 2$  act as subunits in the formation of a functional **GABA** receptor.

- L8 ANSWER 3 OF 11 BIOSIS COPYRIGHT 1999 BIOSIS DUPLICATE 2  
TI Cloning of a novel G-protein-coupled receptor GPR 51 resembling **GABAB** receptors expressed predominantly in nervous tissues and mapped proximal to the hereditary sensory neuropathy type 1 locus on chromosome 9.  
AU Ng, Gordon Y. K. (1); McDonald, Terrence; Bonnert, Tim; Rigby, Michael; Heavens, Robert; Whiting, Paul; Chateau-neuf, Anne; Coulombe, Nathalie; Kargman, Stacia; Caskey, Thomas; Evans, Jilly; O'Neill, Gary P.; Liu, Qingyun  
SO Genomics, (March 15, 1999) Vol. 56, No. 3, pp. 288-295. ISSN: 0888-7543.  
AB Query of the expressed sequence tag database with the rat metabotropic **GABABR1A** receptor amino acid sequence using the TFASTA algorithm revealed two partial cDNA fragments whose sequence information was then used to isolate by PCR a novel full-length human cDNA encoding a putative G-protein-coupled receptor (GPCR), termed GPR 51. Sequence analysis revealed that it encoded a protein of 941 amino acids, similar in size and  
homology to **GABAB** receptors followed by metabotropic glutamate receptors but not other GPCRs. GPR 51 expressed in COS-1 cells showed no specific binding for (3H)(+)baclofen and when expressed in *Xenopus* oocyte and *Xenopus* melanophore functional assays showed no activity to **GABA**, (-)baclofen, and glutamic acid. Northern blot analysis and in situ hybridization revealed that GPR 51 transcripts were predominantly expressed in the central nervous system with highest abundance in the cortex, thalamus, hippocampus, amygdala, cerebellum, and spinal cord. In contrast, GPR 51 receptor transcripts were almost not detected in the peripheral tissues. Gene GPR 51 was localized by radiation hybrid mapping to chromosome 9, 4.81 cR from the WI-8684 marker, and proximal to the hereditary sensory neuropathy type 1 locus.
- L8 ANSWER 8 OF 11 MEDLINE DUPLICATE 6  
TI The use of expressed sequence tag databases to identify novel human **gamma**-aminobutyric acid type receptor genes.  
AU Whiting P J; McAllister G; Bonnert T; Heavens R P; Rigby M R; Sirinathsinghji D J; Marshall G; Thompson S A; Wafford K A  
SO BIOCHEMICAL SOCIETY TRANSACTIONS, (1997 Aug) 25 (3) 817-9. Ref: 21  
Journal code: E48. ISSN: 0300-5127.